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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/528,881	09/09/2005	Tatsuo Hoshino	21420 US C038435/0185662	4641

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EXAMINER
TONGUE, LAKIA J

ART UNIT	PAPER NUMBER
1645	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/528,881	HOSHINO ET AL.	
	Examiner	Art Unit	
	LAKIA J. TONGUE	1645	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *12 February 2009*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-16* is/are pending in the application.

4a) Of the above claim(s) *1-8 and 13-15* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *9-12 and 16* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Applicant's response filed on February 2, 2009 is acknowledged. Claims 1, 2, 5-8, 13, 15 and 16 have been amended. Claims 3, 4 and 17-45 have been canceled. Claims 1, 2 and 5-16 are pending and under examination.

1. Applicants again request reconsideration of the species election requirement with respect to the species for the reasons set forth in the previous rebuttal.

Applicant's arguments have been considered and are deemed non-persuasive for the reasons set forth in the previous office action. Applicant is reminded that he search for each of the outlined inventions would not be co-extensive in scope particularly with regard to the literature search. Burden consists not only of specific searching of classes and subclasses, but also of searching multiple databases for foreign references and literature searches. Burden also resides in the examination of independent claim sets for clarity, enablement, and double patenting issues. Further, a reference that would anticipate the invention of one group would not necessarily anticipate or even make obvious another group. Finally, the consideration for patentability is different in each case. Thus, it would be an undue burden to examine all of the inventions in one application and the restriction for examination purposes as indicated previously is deemed proper and is therefore made final.

Objections Withdrawn

2. In view of Applicant's amendment, the objection to the disclosure because the specification does not provide a Brief Description section to accurately describe each of the figures provided is withdrawn.

3. In view of Applicant's arguments, the objection for the use of multiple trademarks (i.e. QIAGEN on page 5) is withdrawn.

Objections Maintained

4. The objection to claims 10-12 for reciting language of non-elected claims is maintained for the reasons set forth in the previous office action.

Applicant argues that:

1) Claims 10-12 depend from Claim 9, which is an elected claim.

Applicant's arguments have been considered and are deemed non-persuasive.

With regard to Point 1, Applicant's further elected *Sinorhizobium meliloti*, however, claim 10 and 11 both recite the additional invention (*Sinorhizobium meliloti)* as well as *Escherichia coli.* In this instance *Escherichia coli* is the non-elected invention.

Rejections Maintained

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

5. The rejection of claims 11, 12 and 16 under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention is maintained for the reasons set forth in the previous office action.

Applicants argue that:

1) With respect to *Sinorhizobium meliloti* IFO 14782/pVK6, none of the rejected claims recite "*Sinorhizobium meliloti* IFO 14782/pVK6", thus, the rejection is flawed as a matter of law and must be withdrawn.

2) Since *Sinorhizobium meliloti* IFO 14782 is available to the public, IFO 14782/pVK6 may also be readily reproduced in accordance with the methods disclosed in the specification

Applicant's arguments have been considered and are deem non-persuasive.

The rejected claims are drawn a process for preparing vitamin b_6 by cultivating a recombinant microorganism of the genus *Sinorhizobium* which is transformed with a vector containing pyridoxol 5'-phosphate synthase gene and D-erythrose 4-phosphate

dehydrogenase gene, and being capable of producing vitamin B_6 which comprises cultivating the recombinant microorganism under aerobic conditions at a pH value of about 5.0 to 9.0, at a temperature of 10°C to 40°C, and for 1 day to 15 days in a medium containing an assimilable carbon source, a digestible nitrogen source, inorganic salts, and other nutrients necessary for the growth of the microorganism, and then recovering vitamin B_6 formed and accumulated in the culture broth, wherein the pyridoxol 5'-phosphate synthase gene is derived from *Sinorhizobium meliloti* IFO 14782. Subsequent claim 16 recites wherein the recombinant microorganism is *Sinorhizobium meliloti* IFO 14782/pVK6.

With regard to Point 1, contrary to Applicant's assertion, claim 16 recites *Sinorhizobium meliloti* IFO 14782/pVK6.

With regard to Point 2, if *Sinorhizobium meliloti* IFO 14782/pVK6 is publicly available and readily reproduced in accordance with the methods disclosed in the specification then Applicant should aver the same statements as done for *Sinorhizobium meliloti* IFO 14782.

As previously presented, because it is not clear that cell lines possessing the properties of ***Sinorhizobium meliloti* IFO 14782 and *Sinorhizobium meliloti* IFO 14782/pVK6** are known and publicly available or can be reproducibly isolated from nature without undue experimentation and because the claims require the use of a suitable deposit for patent purposes a deposit in a public repository is required. Without a publicly available deposit of the above ***Sinorhizobium meliloti* IFO 14782 and *Sinorhizobium meliloti* IFO 14782/pVK6**, one of ordinary skill in the art could not be

assured of the ability to practice the invention as claimed. Exact replication of the cell line is an unpredictable event.

Applicant's referral to the deposit of ***Sinorhizobium meliloti*** **IFO 14782 on page 3, lines 19-25** of the specification is an insufficient assurance that all required deposits have been made and all the conditions of 37 CFR 1.801-1.809 have been met. Please note that Applicant has not made any reference to *Sinorhizobium meliloti* IFO 14782/pVK6 having met the required deposits conditions.

If the deposit has been made under the provisions of the Budapest Treaty, filing of an affidavit or declaration by applicant or assignees or a statement by an attorney of record who has authority and control over the conditions of deposit over his or her signature and registration number stating that the deposit has been accepted by the International Depository Authority under the provisions of the Budapest Treaty and that all restrictions upon public access to the deposit will be irrevocably removed upon the grant of a patent on this application. These requirements are necessary when deposits are made under the provisions of the Budapest Treaty as the Treaty leaves this specific matter to the discretion of each State. Amendment of the specification to recite the date of the deposit and the complete name and full street address of the depository is required.

If the deposits have not been made under the provisions of the Budapest Treaty, then in order to certify that the deposits comply with the criteria set forth in 37 CFR 1.801-1.809, assurances regarding availability and permanency of deposits are required. Such assurance may be in the form of an affidavit or declaration by applicants

or assignees or in the form of a statement by an attorney of record who has the authority and control over the conditions of deposit over his or her signature and registration number averring:

> (a) during the pendency of this application, access to the deposits will be afforded to the Commissioner upon request;
>
> (b) all restrictions upon the availability to the public of the deposited biological material will be irrevocably removed upon the granting of a patent on this application;
>
> (c) the deposits will be maintained in the public repository for a period of at least thirty years from the date of deposit or for the enforceable life of the patent of or for a period of five years after the date of the most recent request for the furnishing of a sample of the deposited biological material, whichever is longest; and
>
> (d) the deposits will be replaced if they should become nonviable or non-replicable.

In addition, a deposit of biological material that is capable of self-replication either directly or indirectly must be viable at the time of deposit and during the term of deposit. Viability may be tested by the repository. The test must conclude only that the deposited material is capable of reproduction. A viability statement for each deposit of biological material not made under the Budapest Treaty must be filed in the application and must contain:

> 1) The name and address of the depository;
> 2) The name and address of the depositor;
> 3) The date of deposit;
> 4) The identity of the deposit and the accession number given by the depository;
> 5) The date of the viability test;
> 6) The procedures used to obtain a sample if test is not done by the depository; and
> 7) A statement that the deposit is capable of reproduction.

As well as a statement that removes restrictions to provide access to this strain upon granting of a patent has not made, either in the instant Specification, nor in Applicant's Remarks.

One of the critical conditions of Deposit is defined in 37 CFR 1.808 requires that the deposit of biological material be made under two conditions: (A) access to the deposit will be available during pendency of the patent application making reference to the deposit to one determined by the Commissioner to be entitled thereto under 37 CFR 1.14 and 35 U.S.C. 122, and (B) with one exception, that all restrictions imposed by the depositor on the availability to the public of the deposited biological material be irrevocably removed upon the granting of the patent. Upon making this statement, the rejection under 35 USC 112, first paragraph will be withdrawn. This rejection can be obviated through perfection of the Deposit and amendment of the claims to clearly set forth the Deposited strains.

As a possible means for completing the record, applicant may submit a copy of the contract with the depository for deposit and maintenance of each deposit.
If the deposit was made after the effective filing date of the application for patent in the United States, a verified statement is required from a person in a position to corroborate that the ***Sinorhizobium meliloti*** **IFO 14782 and** ***Sinorhizobium meliloti*** **IFO 14782/pVK6** described in the specification as filed is the same as that deposited in the depository. Corroboration may take the form of a showing a chain of custody from applicant to the depository coupled with corroboration that the deposit is identical to the

biological material described in the specification and in the applicant's possession at the time the application was filed.

Applicant's attention is directed to In re Lundack, 773 F.2d.1216, 227 USPQ (CAFC 1985) and 37 CFR 1.801-1.809 for further information concerning deposit practice.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

6. The rejection of claims 9-12 and 16 under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention is maintained for the reasons set forth in the previous office action.

Applicant argues that:

1) The metes and bounds of what is claimed are determinable with a reasonable degree of precision and particularity.

2) The specification discloses where to obtain IFO 14782/pVK6. Therefore there is nothing vague or indefinite about any of the recited terms.

Applicant's arguments have been considered and are deemed non-persuasive.

With regard to Points 1 and 2, contrary to Applicant's argument, it is unclear what is meant by said terms as no structural or biological properties are conveyed by said term. "IFO 14782" and "IFO 14782/pVK611" appear to be accession numbers or some

other type of laboratory designation? If the former is true, Applicant is reminded that the claims must specifically recite the depository and the accession number under which the claimed organism was deposited.

As previously presented, claims 11, 12 and 16 are rendered vague and indefinite by the use of the terms "IFO 14782" and "IFO 14782/pVK611". It is unclear what is meant by said terms as no structural or biological properties are conveyed by said term. What constitutes "IFO 14782" and "IFO 14782/pVK611"? Are they accession numbers or some other type of laboratory designation? If the former is true, Applicant is reminded that the claims must specifically recite the depository and the accession number under which the claimed organism was deposited. As written, it is impossible to determine the metes and bounds of the claimed invention.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

7. The rejection of Claims 9-12 and 16 under 35 U.S.C. 103(a) as obvious over Ichikawa et al. (EP 0765938) and Yocum et al. (U.S. 2005/0164335 A1) is maintained for the reasons set forth in the previous office action.

Applicant argues that:

1) Yocum is not properly cited as prior art under 35 USC § 102(e). In order for the published Yocum application to be effective as prior art, there must be support for the alleged patent defeating subject matter back to one of the March 2002 provisional filings from which Yocum claims benefit.

2) The evidence in Yocum post dates the priority date of the instant application.

3) The disclosures relating to pdxJ in the three Yocum applications are either background information or specifically relating to the overexpression of *E. coli* pdxJ or in *E. coli* itself.

Applicant's arguments have been considered and are deemed non-persuasive.

The rejected claims are drawn to a process for preparing vitamin b_6 by cultivating a recombinant microorganism of the genus *Sinorhizobium* which is transformed with a vector containing pyridoxol 5'-phosphate synthase gene and D-erythrose 4-phosphate dehydrogenase gene, and being capable of producing vitamin B_6 which comprises cultivating the recombinant microorganism under aerobic conditions at a pH value of about 5.0 to 9.0, at a temperature of 10°C to 40°C, and for 1 day to 15 days in a medium containing an assimilable carbon source, a digestible nitrogen source, inorganic salts, and other nutrients necessary for the growth of the microorganism, and then recovering vitamin B_6 formed and accumulated in the culture broth.

With regard to Points 1 and 2, support for Pdxj in the March 2002 provisional application 60368618 is found on page 25, Example 5. Consequently, the provisional applies as prior art.

With regard to Point 3, while the Yocum reference relates to the overexpression of *E. coli* pdxJ, Yocum discloses a method of producing B_6 vitamers. Said method expresses pdxJ, which necessarily encompasses pyridoxol 5'-phos-phate synthase gene and D-erythrose 4-phosphate dehydrogenase gene (see paragraph 0014). Moreover, Yocum et al. disclose that vectors containing genes encoding pdxJ are used (see paragraph 0015). Yocum was combined with Ichikawa et al., which fully disclose a process for producing vitamin B_6 which comprises cultivating a microorganism belonging to the genus *Rhizobium (*former name for *Sinorhizobium)* and being capable of producing B_6 in a culture medium under aerobic conditions and separating the resulting B_6 from the fermentation broth. The combination of references renders the instant invention non-obvious.

As previously presented, Ichikawa et al. disclose a process for producing vitamin B_6 which comprises cultivating a microorganism belonging to the genus *Rhizobium (*former name for *Sinorhizobium)* and being capable of producing B_6 in a culture medium under aerobic conditions and separating the resulting B_6 from the fermentation broth (see page 2, lines 14-16). Ichikawa et al. disclose that *Rhizobium* are incubated in a culture medium containing assimilable carbon sources, digestible nitrogen sources, inorganic salts and other nutrients necessary for the growth of the microorganism (see page 2, lines 21-24). Ichikawa et al. disclose that the pH of the culture medium is suitably about 5 to about 9; the temperature is about 10 to 40°C; and the cultivation time is about 1 to 14 days (see page 2, lines 28-30). Moreover, Ichikawa et al. disclose that suitable strains include but are not limited to *Rhizobium* IFO 14782 (see page 2, lines

42-46). After the cultivation, the produced vitamin B_6 may be separated from the culture broth and purified (see page 2, lines 37 and 38).

Ichikawa et al. do not specifically disclose that the claimed organism is transformed with a vector containing pyridoxol 5'-phos-phate synthase gene and D-erythrose 4-phosphate dehydrogenase gene.

Yocum et al. disclose a method of producing B_6 vitamers. Said method expresses pdxJ, which necessarily encompasses pyridoxol 5'-phos-phate synthase gene and D-erythrose 4-phosphate dehydrogenase gene (see paragraph 0014). Moreover, Yocum et al. disclose that vectors containing genes encoding pdxJ are used (see paragraph 0015).

It would have been obvious for one of ordinary skill in the art at the time of the invention to transform *Sinorhizobium* with a vector containing pyridoxol 5'-phosphate synthase gene and D-erythrose 4-phosphate dehydrogenase gene because all the claimed elements were known in the prior art and one skilled in the art could have combined the elements as claimed by known methods with no change in their respective functions, and the combination would have yielded predictable results to one of ordinary skill in the art at the time of the invention. KSR forecloses the argument that a **specific** teaching, suggestion, or motivation is required to support a finding of obvious. See the recent Board decision *Ex parte Smith,--USPQ2d--,* slip op. at 20, (Bd. Pat. App. & Interf. June 25, 2007) (citing *KSR, 82 USPQ2d* at 1396).

Absent evidence to the contrary the genes of the prior art are the same as those organisms recited in the instant claims. The process of Ichikawa et al. necessarily

encompasses *Sinorhizobium meliloti* IFO 14782/pVK611 and is necessarily capable of producing vitamin B_{6}..

Conclusion

8. No claims are allowed.

9. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to LAKIA J. TONGUE whose telephone number is (571)272-2921. The examiner can normally be reached on Monday-Friday 8-5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert Mondesi can be reached on 571-272-0956. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Robert B Mondesi/
Supervisory Patent Examiner, Art Unit 1645

LJT
5/11/09